

REMARKS

This amendment is being made pursuant to the Final Office Action mailed July 27, 2007. Claims 1, 2, 5-15, 18-24 and 27-29 remain pending in the application. Claims 3, 4, 16, 17, 25 and 26 have been cancelled without prejudice. It is requested that the Examiner enter the present amendments and consider the following remarks in connection with the Request For Continued Examination that has been submitted concurrently herewith.

Rejection under 35 U.S.C. § 102(b)

Claims 1, 2, 5, 9 and 11 were finally rejected as being anticipated by Terasaka (U.S. 5,770,305). Again, this rejection is respectfully yet strenuously traversed.

Initially, it will be noted that minor amendments have been made to independent claims 1, claims 14 and 22 to more positively set forth that the SMA particles are provided in their austenitic phase.

As explained in the previous response filed by the undersigned, Terasaka involves the use of Nickel-titanium particles 44 that are provided to maintain electrical conductivity between two electrical connection terminals. It is critical in Terasaka that the particles 44 are provided in the resin in a "crushed" or deformed state to a lesser thickness from their initial spherical shape (which is possible only when the particles are in their martensitic state). This is the "typical" or "normal" initial state of the particles. Providing the particles in a crushed state is necessary because as the resin within which the particles are disposed expands by an increase in temperature, the particles need to be able to expand in shape due to the thermally-induced "shape memory

effect", to be able to maintain electrical conductivity between the two electrical connection terminals. Since the particles are already deformed to a lesser thickness by being in their martensitic state, they essentially lose any meaningful ability to absorb impact energy. Put differently, when the particles are deformed to a lesser thickness in their martensitic phase (i.e., their "normal" or typical state in Terasaka), they will operate primarily to just transfer impact energy to the adjacent structure due to being unable to absorb energy via the stress-induced phase transformation from austenite to martensite. Thus, it is submitted that because Terasaka employs the Nickel-titanium particles in their martensitic phase, no significant impact absorbing quality via a stress-induced phase transformation (austenite to martensite) is provided to the particles. Furthermore, the Examiner will note that Terasaka is not concerned whatsoever with improving compress-after-impact strength of the resin. The only concern is Terasaka is maintaining electrical conductivity between the two connection terminals. A declaration under 37 C.F.R. §1.132 by inventor Terry L. Schneider is being submitted herewith to support the above-mentioned assertions. Accordingly, reconsideration and withdrawal of the rejection based on Terasaka is respectfully requested.

Rejection Under 35 U.S.C. §103(a)

Claims 1-29 were rejected as being obvious over Terasaka in view of Herkules and Yliopisto. For essentially the reasons explained above, this rejection is also respectfully traversed. While Herkules and Yliopisto may discuss the various properties of shape memory alloys, neither provides any suggestion or motivation to combine their teachings with the system of Terasaka to produce the claimed subject matter. In fact,

using SMA particles in their austenitic phase would destroy the functionality and utility of the resin in Terasaka. This is because the particles in Terasaka need to be able to expand in response to temperature increase (i.e. the “shape memory effect” which is only possible if the particle starts in its martensitic phase).

The fundamentally important point which the undersigned wishes to emphasize is that there is no suggestion from the Herkules or Yliopisto references, nor from the Terasaka reference, to use SMA particles in their austenitic phase to improve the compression-after-impact strength of the resin in Terasaka. Terasaka simply is not concerned whatsoever with improving compression-after-impact strength, and in fact to use the use SMA particles in their austenitic phase in the resin of Terasaka would basically destroy the ability of the resin to function for its intended purpose. Accordingly, it is respectfully requested that the obviousness rejection based on Terasaka/Herkules or Terasaka/Yliopisto be withdrawn.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

Dated: November 8, 2007

By: 
Mark D. Elchuk, Reg. No. 33,686

HARNESS, DICKEY & PIERCE, P.L.C.
P.O. Box 828
Bloomfield Hills, Michigan 48303
(248) 641-1600

MDE/drl